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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/345,238	06/30/1999	SCOTT SHAOBING CHEN	YO999-172	9988

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EXAMINER	
HAN, QI	

ART UNIT	PAPER NUMBER
2626	

MAIL DATE	DELIVERY MODE
07/11/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/345,238	CHEN ET AL.	
	Examiner	Art Unit	
	Qi Han	2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 April 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-35* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-35* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *04/25/2007*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114.

Information Disclosure Statement

2. The references listed in the Information Disclosure Statement submitted on 04/25/2007 have been considered by the examiner (see attached PTO-1449), except the cited reference IDS 4 that cannot be considered because of lacking English description/translation.

Response to Amendment

3. This communication is responsive to the applicant's RCE filed on 04/25/2007, after Appeal Docketing Notice file on 08/07/2006. It is noted that there was no any amended claim after the final rejection filed on 03/07/2003.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-5, 8, 10-14, 16-19, 21-26 and 28-35 are rejected under 35 U.S.C. 102(b) as being anticipated by Chen et al. ("speaker, Environment and Channel Change Detection and Cluster via the Bayesian Information Criterion," proceedings of the DARPA broadcast news transcription and understanding workshop, Lansdowne, VA, Feb 8-11, 1998) hereinafter referenced as Chen.

Regarding **claim 1**, Chen discloses 'speaker, environment and channel change detection and cluster via the Bayesian Information criterion' (title), comprising:

"identifying potential segment boundaries in said audio source", (page 1, p(paragraph)1-2, 'detecting changes in speaker identity, environmental condition and change condition' (corresponding to identifying segment boundaries), 'automatic segmentation of an audio stream', 'to segment the audio stream into homogeneous regions...'); and

"clustering homogeneous segments from said audio source substantially concurrently with said identifying step" (page 1, p2, 'to cluster speech segments (audio source) into homogeneous clusters according to speaker identity...').

Regarding **claim 2** (depending on claim 1), Chen further discloses "said identifying step identifies segment boundaries using a BIC model-selection criterion" (page 2, p4, 'detecting changes in speaker identity...' based on 'the Bayesian Information Criterion (BIC)').

Regarding **claim 3** (depending on claim 2), Chen further discloses "wherein a first model assumes there is no boundary in a portion of said audio source and a second model assumes there is a boundary in said portion of said audio source" (page 3, p4-p5, assuming that the

sequence of cepstral vectors 'is draw from an independent multivariate Gaussian process' and 'there is at most one changing point in the Gaussian process'; page 4, p2, 'we can view the hypothesis testing as a problem of model selection' and 'are comparing two models: one models the data as two Gaussians')

Regarding **claim 4** (depending on claim 2), Chen further discloses a combination of two equations: the maximum likelihood ratio (page 3, equation (2)) and the difference between the BIC values of the two models (page 4, equation (3)), which is equivalent to the equation as claimed.

Regarding **claim 5** (depending on claim 1), Chen further discloses that "identifying step considers a smaller window size, n, of samples in areas where a segment boundary is unlikely to occur" (page 6, p1, an algorithm sequentially detect the changing points in the Gaussian process and suggests that the algorithm starts with a small window and then extends the window size in each detecting loop, it is also inherently true that the smaller the window size, the more unlikely the segment boundary occurs).

Regarding **claim 8** (depending on claim 2), Chen further discloses "BIC model selection test is not performed at the border of each window of samples" (page 6, p1, the algorithm implies not using the detected change point in new process window (see the algorithm: set a= t + 1), which is read on the claim).

Regarding **claim 10** (depending on claim 1), Chen further discloses "clustering step is performed using a BIC model-selection criterion" (page 8, p 2).

Regarding **claim 11** (depending on claim 10), Chen further discloses "a first model assumes that two segments or clusters should be merged, and a second model assumes that said two segments or clusters should be maintained independently" (abstract and page 9, p3, in the hierarchical clustering two nodes can be merged only if the merging increases the BIC value (abstract, also see page 9, p3), which implies that the two models used in identifying step are also applied in clustering step, as claimed).

Regarding **claim 12** (depending on claim 11), Chen further discloses "merging said two clusters if a difference in BIC values for each of said models is positive" (page 9, p4, 'the two nodes should not merger if an equation (8) (page 9, p4) is negative').

Regarding **claim 13** (depending on claim 1), Chen further discloses "clustering step is performed using K previously identified clusters and M segments to be clustered" (page 8, p2-p3, using M segments and k clusters; page 9, p3, 'successively merge two nearest nodes' in clustering step and generate a new cluster set S' from pervious set S).

Regarding **claim 14** (depending on claim 1), Chen further discloses "assigning a cluster identifier to each of said clusters" (page 9, p3, shows to assign s as an identifier for a new cluster from two previous nodes or clusters s1 and s2 after each merging, in addition, it is inherently true that an index of data structure employed for clustering task can be always used as a cluster identifier in software and/or firmware based process).

Regarding **claim 16**, the rejection is based on the same reason described for claim 1, because Chen discloses the same method for both "segments from said audio source corresponding to the same speaker" and "homogeneous segments". In addition, the applicant

admitted that "humongous segments" are "generally corresponding to the same speaker" (abstract).

Regarding **claims 17-19 and 22** (depending on claim 16), the rejection is based on the same reason described for claims 2-3, 5 and 13 respectively, because the claims recite the same or similar limitation as claims 2-3, 5 and 13 respectively.

Regarding **claim 21** (depending on claim 16), the rejection is based on the same reason described for claims 10 and 11, because the claim recites the same or similar limitation as claims 10 and 11.

Regarding **claim 23,** the rejection is based on the same reason as described for claim 1, because the rejection for claim 1 covers the same or similar limitation as claim 1.

Regarding **claims 24-26 and 29** (depending on claim 23), the rejection is based on the same reason described for claims 2-3, 5 and 13 respectively, because the claims recite the same or similar limitation as claims 2-3, 5 and 13 respectively.

Regarding **claim 28** (depending on claim 23), the rejection is based on the same reason described for claims 10 and 11, because the claim recites the same or similar limitation as claims 10 and 11.

Regarding **claim 30**, it recites a system. The rejection is based on the same reason described for claim 1, because the rejection for claim 1 covers the same or similar limitations as claim 30, wherein the automatic segmentation functionality disclosed by Chen is necessarily and inherently implemented by using computer based system.

Regarding **claim 31**, it recites an article of manufacture. The rejection is based on the same reason described for claim 1, because the rejection for claim 1 covers the same or similar

limitations as claim 31, wherein the automatic segmentation functionality disclosed by Chen is necessarily and inherently implemented by using computer based system.

Regarding **claim 32**, it recites a system. The rejection is based on the same reason described for claim 16, because the rejection for claim 16 covers the same or similar limitations as claim 32, wherein the automatic segmentation functionality disclosed by Chen is necessarily and inherently implemented by using computer based system.

Regarding **claim 33**, it recites an article of manufacture. The rejection is based on the same reason described for claim 16, because the rejection for claim 16 covers the same or similar limitations as claim 33, wherein the automatic segmentation functionality disclosed by Chen is necessarily and inherently implemented by using computer based system.

Regarding **claim 34**, it recites a system. The rejection is based on the same reason described for claim 23, because the rejection for claim 23 covers the same or similar limitations as claim 34, wherein the automatic segmentation functionality disclosed by Chen is necessarily and inherently implemented by using computer based system.

Regarding **claim 35**, it recites an article of manufacture. The rejection is based on the same reason described for claim 23, because the rejection for claim 23 covers the same or similar limitations as claim 35, wherein the automatic segmentation functionality disclosed by Chen is necessarily and inherently implemented by using computer based system.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 6-7, 9, 20 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen in view of well known prior art (MPEP 2144.03).

Regarding **claim 6** (depending on claim 5), Chen does not expressly disclose "said window size, n, is increased in a relatively slow manner when the window size is small and increase in a faster manner when the window size is larger". However, the examiner takes official notice of the fact that it was well known in the art to adjust increase rate based on data size processed.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Chen by specifically providing an adjustable increase rate base on processed window size, for the purpose of reducing processing time.

Regarding **claim 7** (depending on claim 6), Chen in view of well-known prior art further discloses that "window size, n, is initialized to a minimum value after a segment boundary is detected" (Chen: page 6, p1, shows that the window size [a=t+1, b=a+1]=1 is reinitialized after detecting a segment boundary).

Regarding **claim 9** (depending on claim 6), Chen does not expressly disclose that "BIC model selection test is not performed when the window size, n, exceeds a predefined threshold." However, the examiner takes official notice of the fact that it was well known in the art to stop a process when it exceeds a predefined threshold.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Chen by specifically providing a predefined threshold and a test condition for the purpose of preventing a process from over sizing.

Regarding **claim 20** (depending on claim 6), Chen does not expressly disclose that "wherein said BIC model selection test is not performed where the detection of a boundary is unlikely to occur." However, the examiner takes official notice of the fact that it was well known in the art to skip certain portion of data for selection test, because the portion has very small chance to be hit.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Chen by providing skipping certain portion of data for the selection test, for the purpose of increasing efficiency and reducing processing time.

Regarding **claim 27** (depending on claim 24), the rejection is based on the same reason described for claim 20, because the claim recites the same or similar limitation as claim 20.

6. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen in view of Kleider et al. (USPN 5,930,748), hereinafter referenced as Kleider.

Regarding **claim 15** (depending on claim 1), Chen does not expressly disclose "processing said audio source with a speaker identification engine to assign a speaker name to each of said cluster." However, the feature was well known in the art as evidenced by Kleider who, in the same field of endeavor, discloses 'speaker identification system and method' (title), comprising 'a speaker identification metric (226)' in that 'each element is associated with one particular speaker in the speaker model data 213' (column 6, lines 25-32); and suggests that the

information of the speaker model data may include 'speaker name' (Fig. 2 and column 6, line 44). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Chen by specifically providing clustered speaker with a speaker identification such as a speaker name, as taught by Kleider, for the purpose of using a common identifier for an identified and/or clustered speaker for a speaker processing system.

Conclusion

7. Please address mail to be delivered by the United States Postal Service (USPS) as follows:

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Effective January 14, 2005, except correspondence for Maintenance Fee payments, Deposit Account Replenishments (see 1.25(c)(4)), and Licensing and Review (see 37 CFR 5.1(c) and 5.2(c)), please address correspondence to be delivered by other delivery services (Federal Express (Fed Ex), UPS, DHL, Laser, Action, Purolater, etc.) as follows:

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Qi Han whose telephone numbers is (571) 272-7604. The examiner can normally be reached on Monday through Thursday from 9:00 a.m. to 7:30 p.m. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil, can be reached on (571) 272-7602.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Inquiries regarding the status of submissions relating to an application or questions on the Private PAIR system should be directed to the Electronic Business Center (EBC) at 866-217-9197 (toll-free) or 703-305-3028 between the

hours of 6 a.m. and midnight Monday through Friday EST, or by e-mail at: ebc@uspto.gov. For general information about the PAIR system, see http://pair-direct.uspto.gov.

QH/qh
June 27, 2007

RICHEMOND DORVIL
SUPERVISORY PATENT EXAMINER